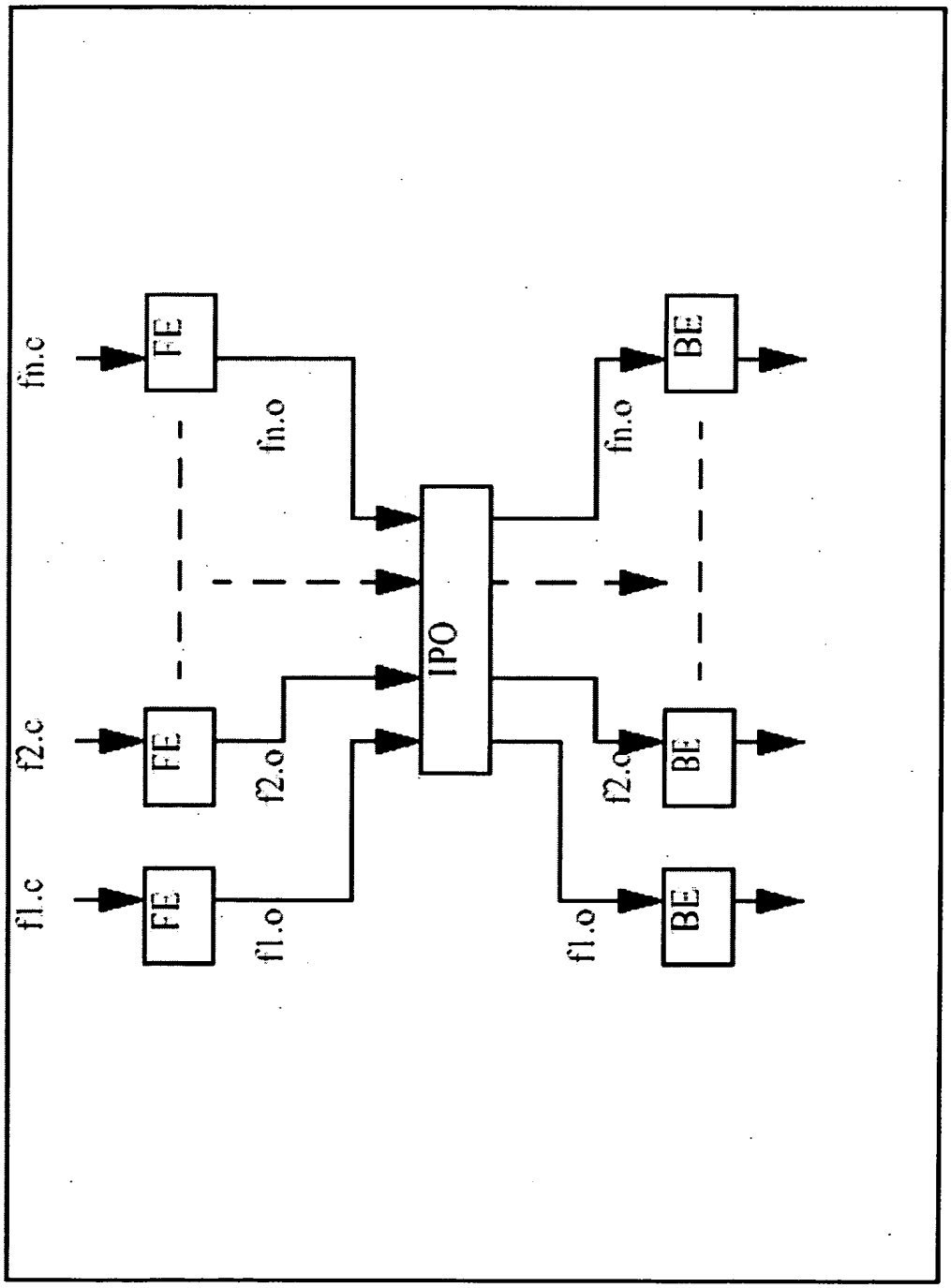

Figure 1A

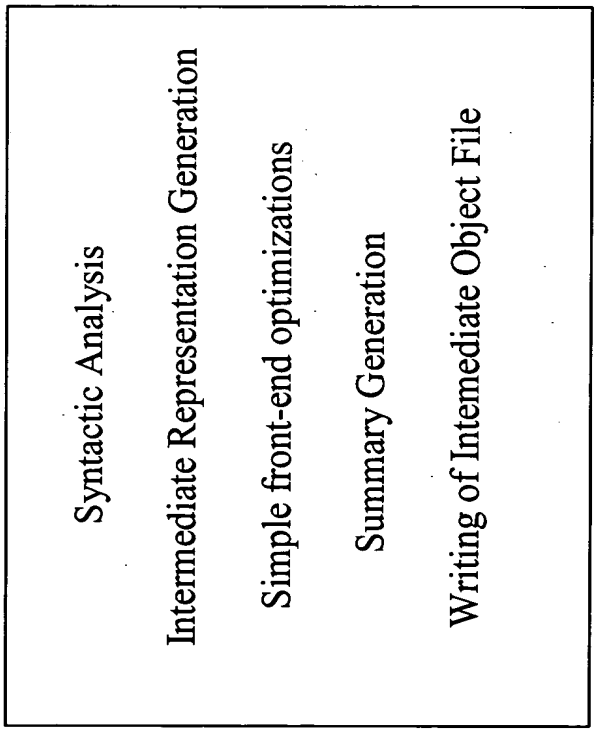
Syntactic Analysis
Intermediate Representation Generation
Simple front-end optimizations
Summary Generation
Writing of Intemediate Object File

Figure 1B

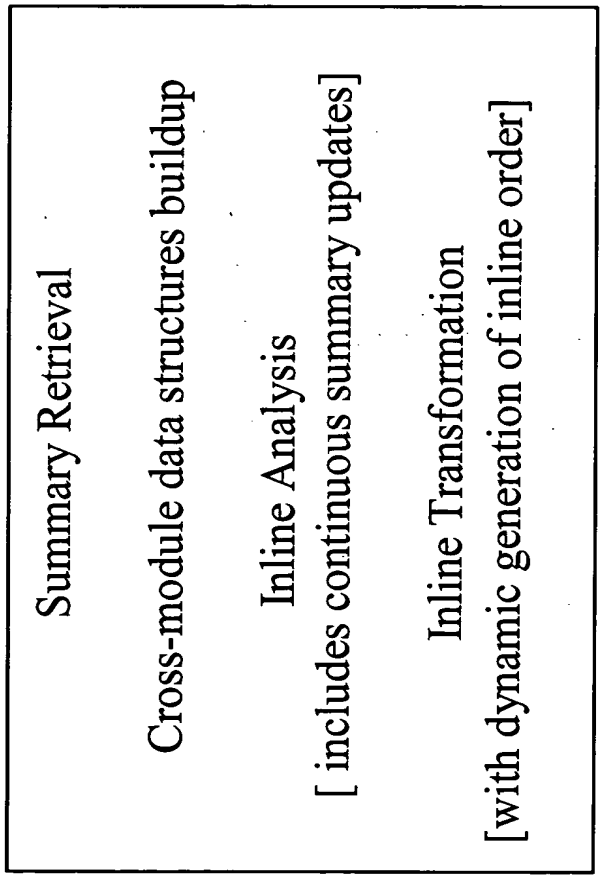
Summary Retrieval
Cross-module data structures buildup
Inline Analysis
[includes continuous summary updates]
Inline Transformation
[with dynamic generation of inline order]

Figure 1C

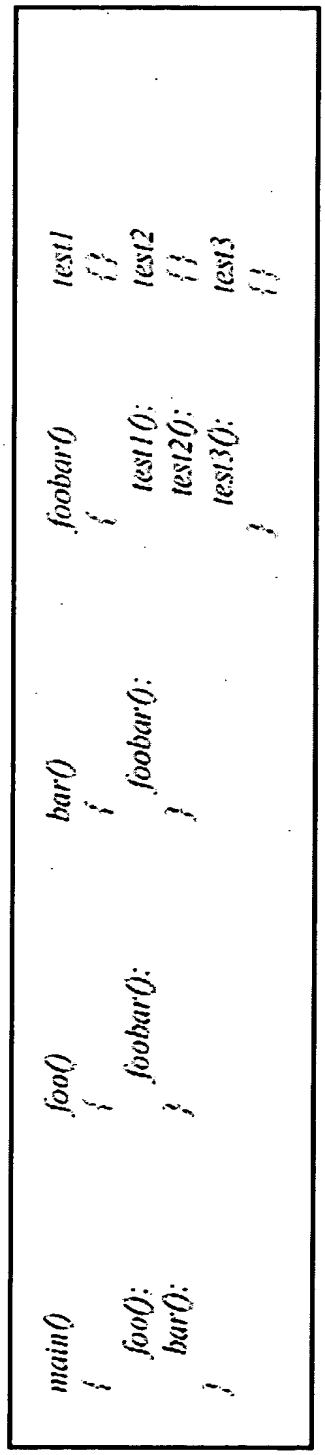

Figure 2A
(Background Art)

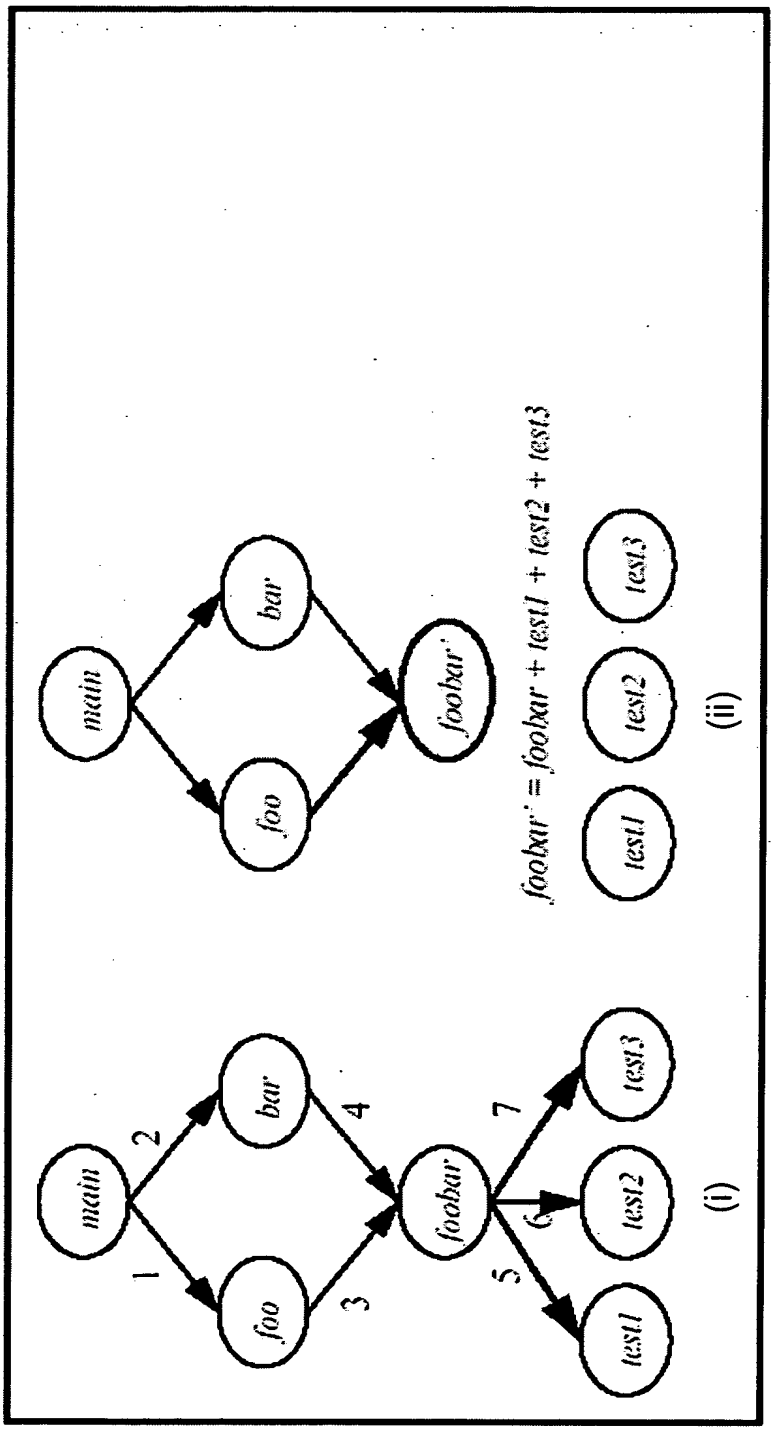

Figure 2B
(Background Art)

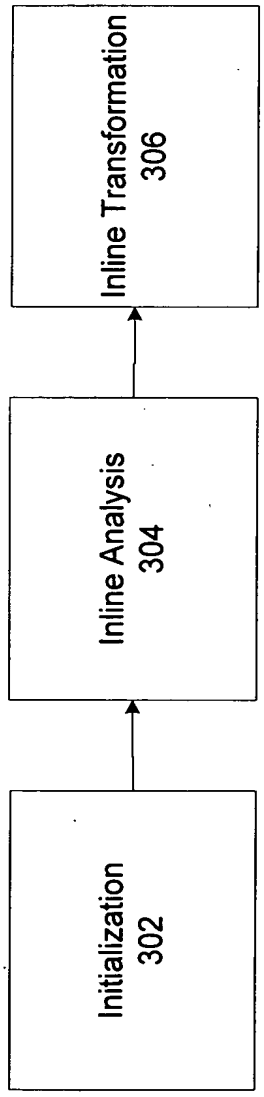
Initialization
302
Inline Analysis
304
Inline Transformation
306

Figure 3

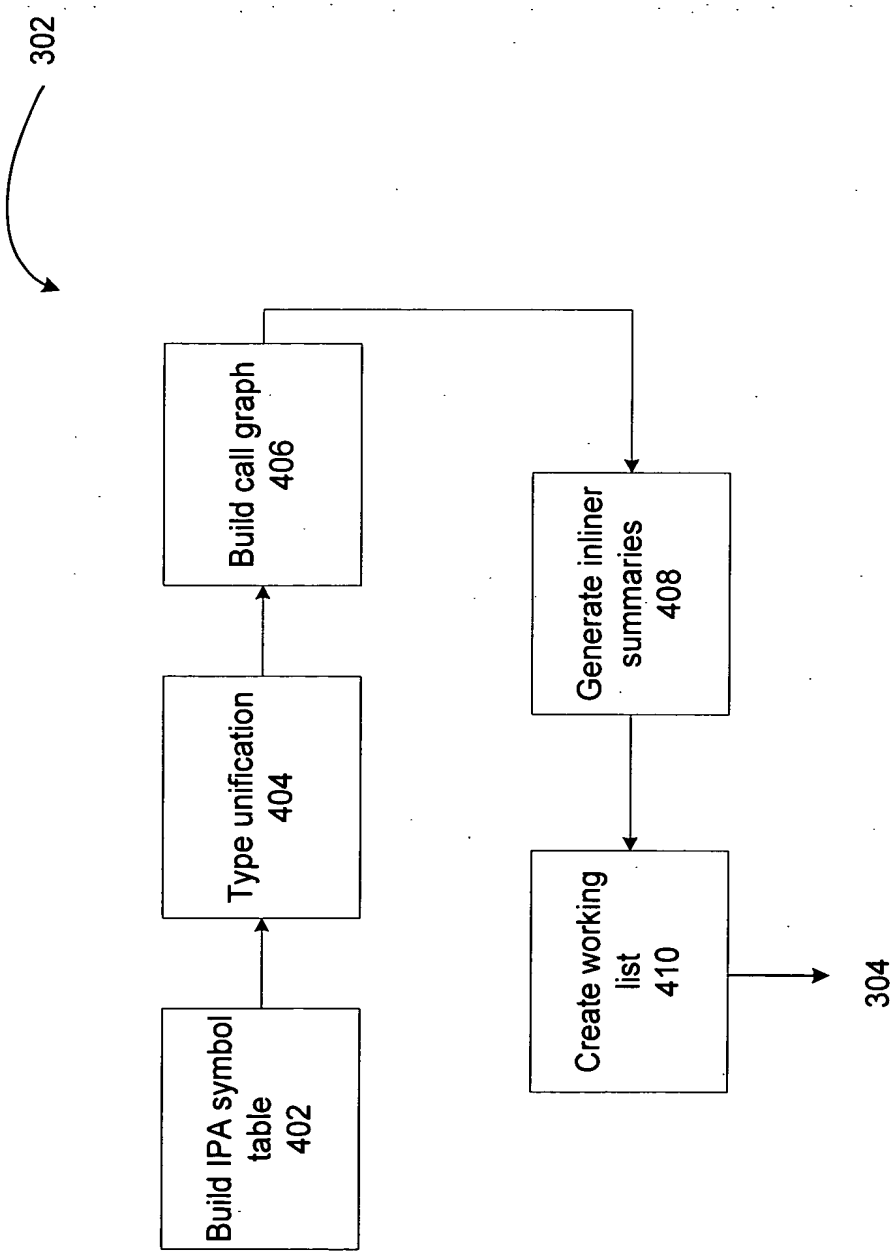
302
Build IPA symbol table 402
Type unification 404
Build call graph 406
Generate inliner summaries 408
Create working list 410
304

Figure 4

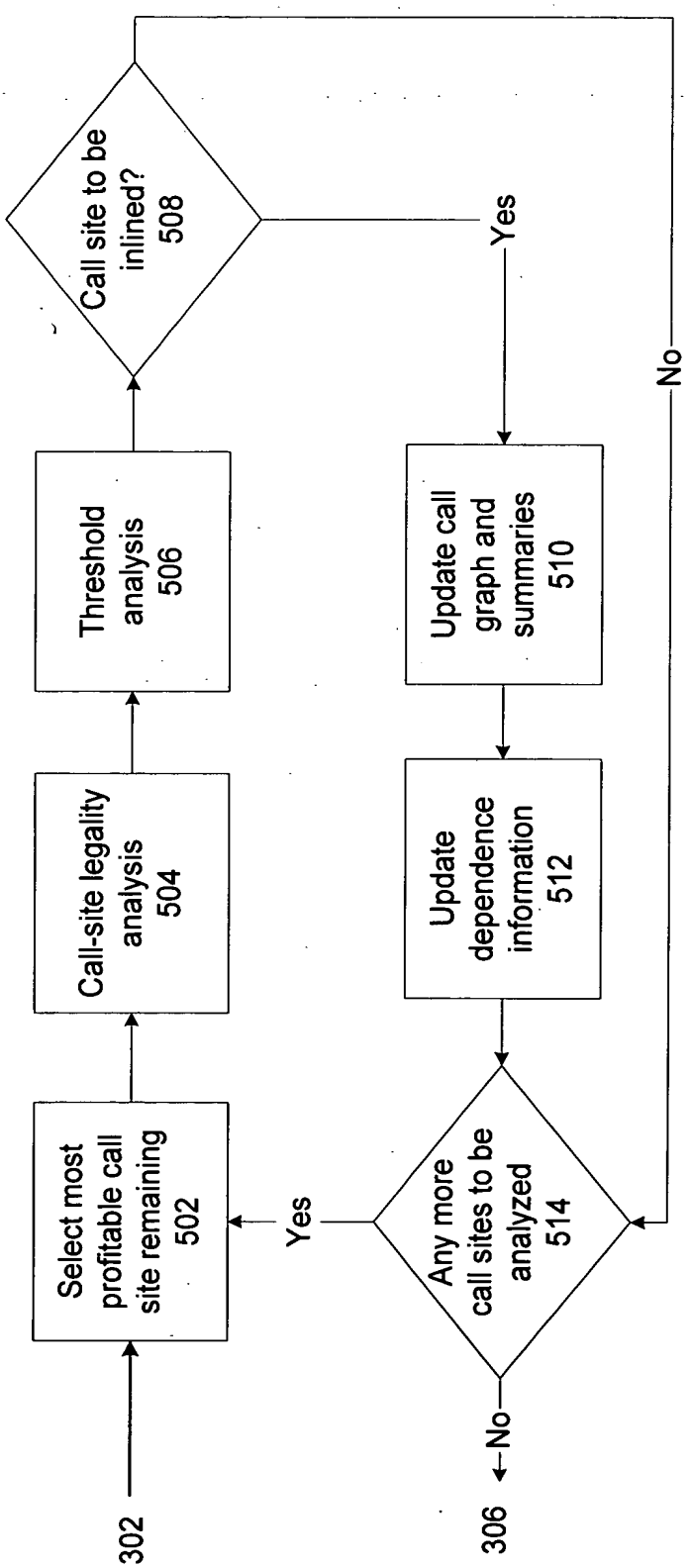
302
Select most profitable call site remaining 502
Call-site legality analysis 504
Threshold analysis 506
Call site to be inlined? 508
Yes
No
Update call graph and summaries 510
Update dependence information 512
Any more call sites to be analyzed 514
Yes
No
306
304

Figure 5

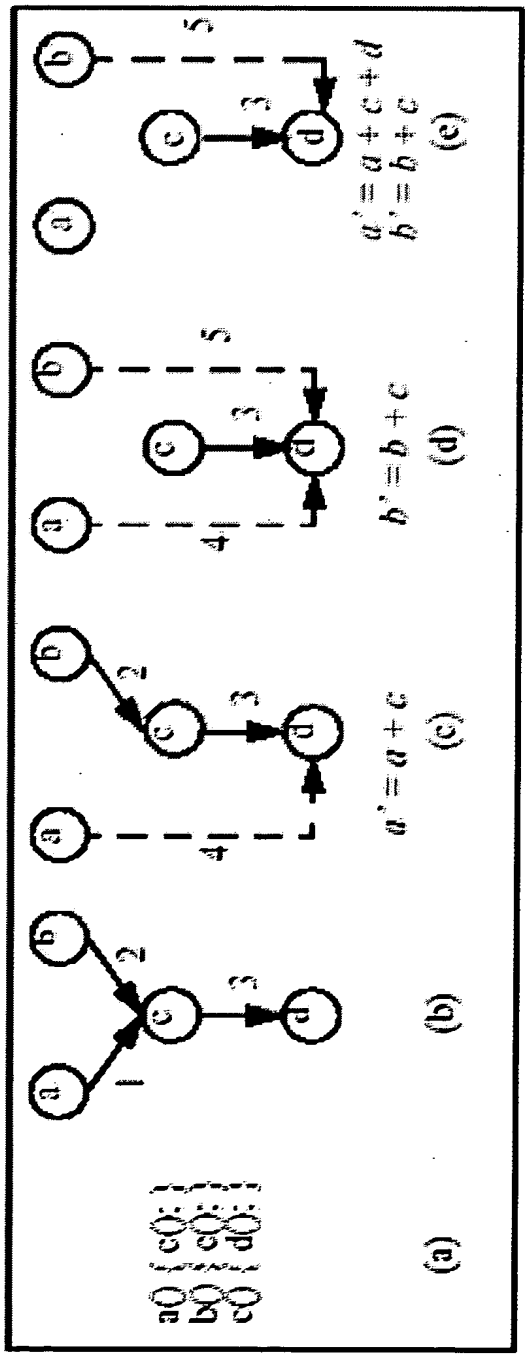

Figure 6

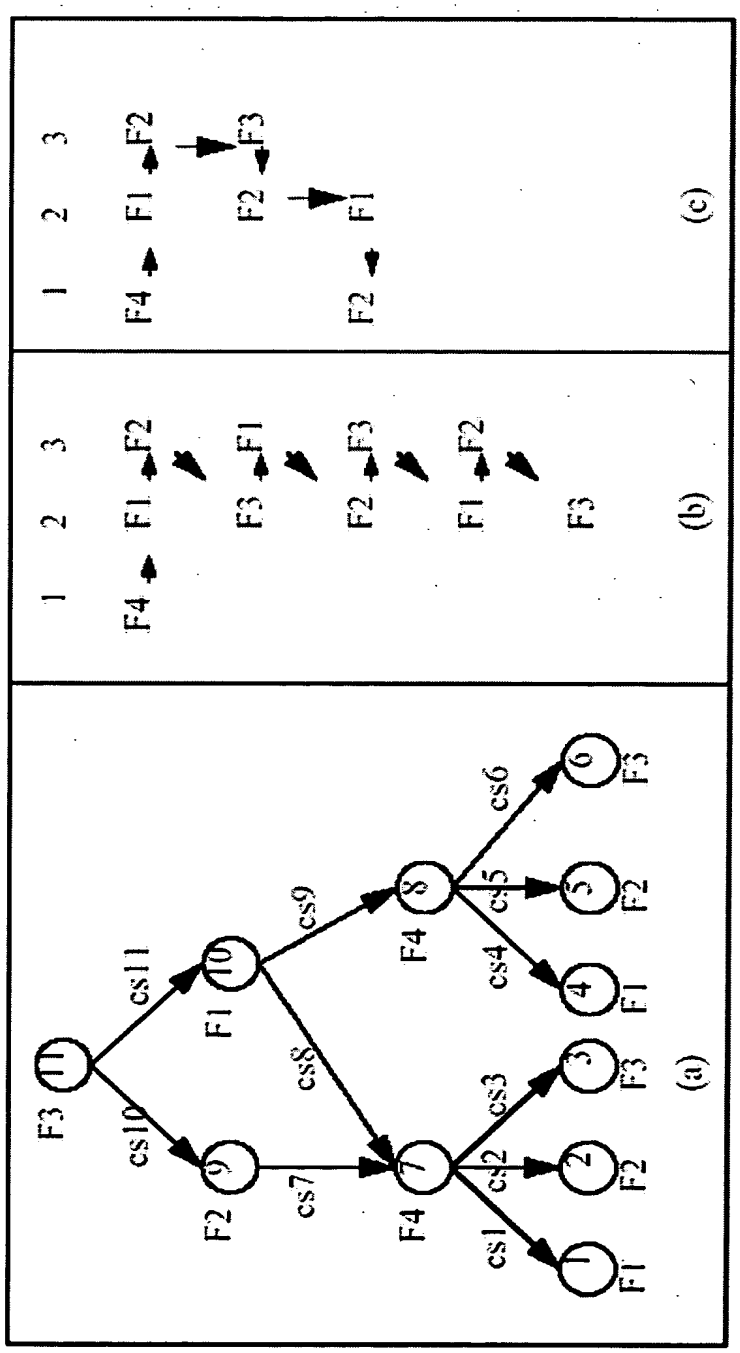
1 2 3
F4 F1 F2
F2 F3
F2 F1
(c)
1 2 3
F4 F1 F2
F3 F1
F2 F3
F1 F2
F3
(b)
F3
cs11
cs10
F1
F2
cs9
cs8
cs7
F4
F4
cs6
cs5
cs4
cs3
cs2
cs1
6 F3
5 F2
4 F1
3 F3
2 F2
1 F1
(a)

Figure 7

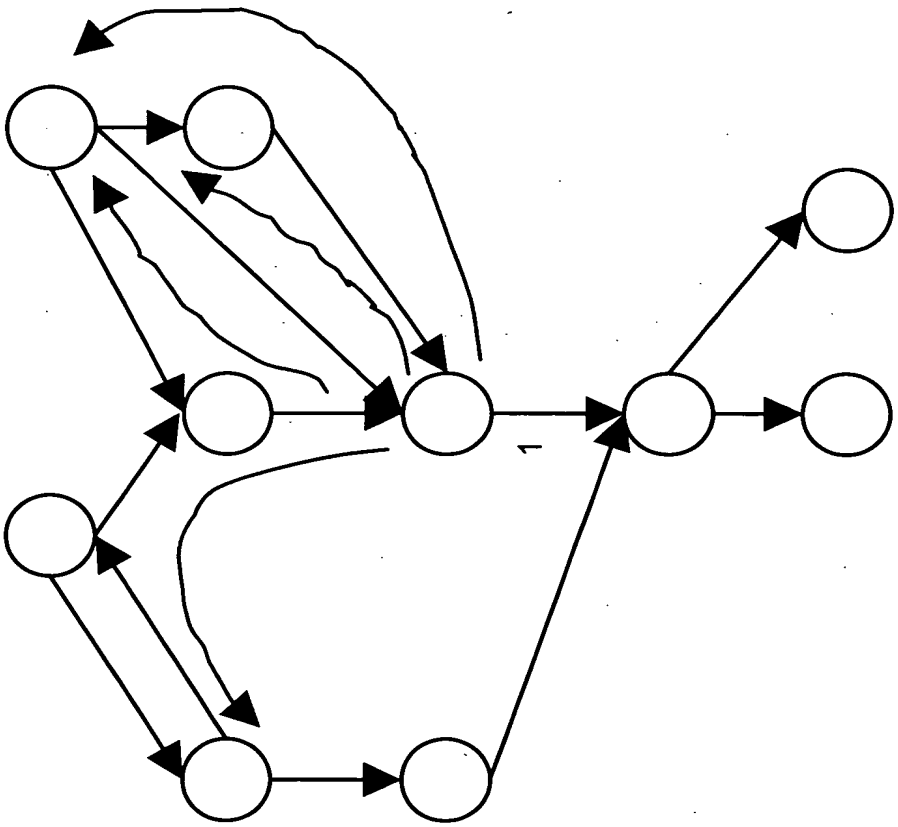

Figure 8

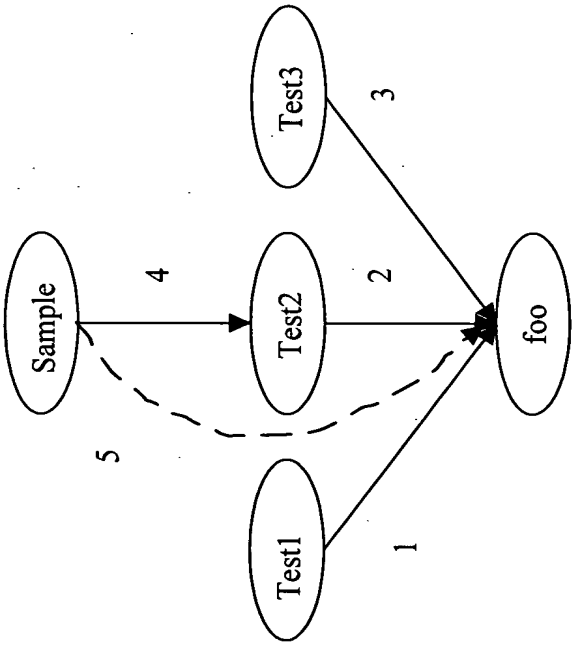

Figure 9

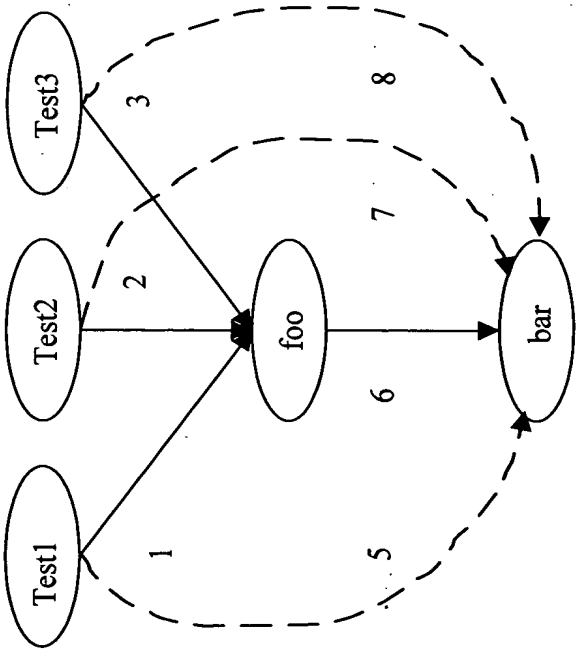

Figure 10

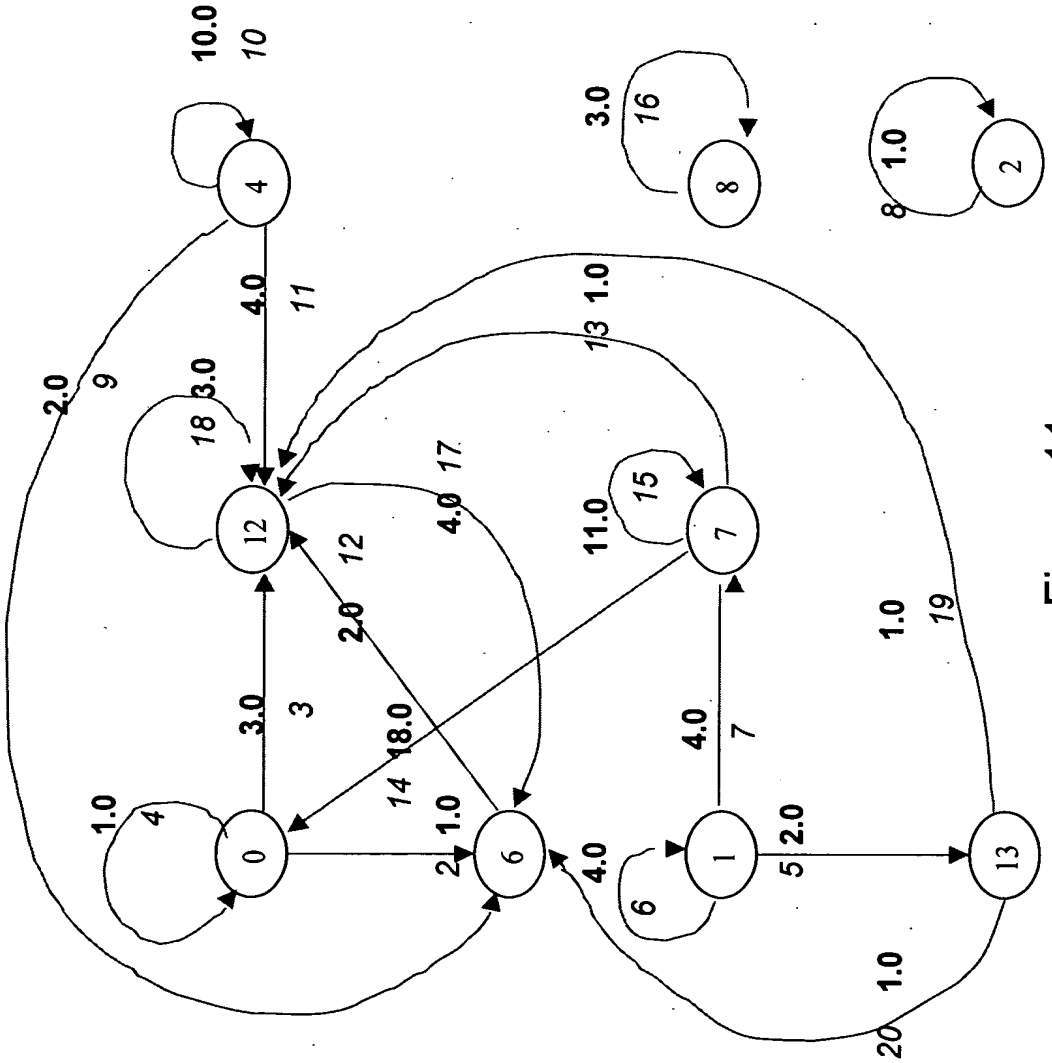
10.0
10
4
3.0
16
8
1.0
8
2
2.0
9
4.0
11
13
1.0
18
3.0
17
12
4.0
12
15
11.0
7
2.0
1.0
19
3
3.0
18.0
14
4.0
7
1.0
4
0
1.0
2
6
4.0
1
2.0
5
13
6
1.0
20

Figure 11

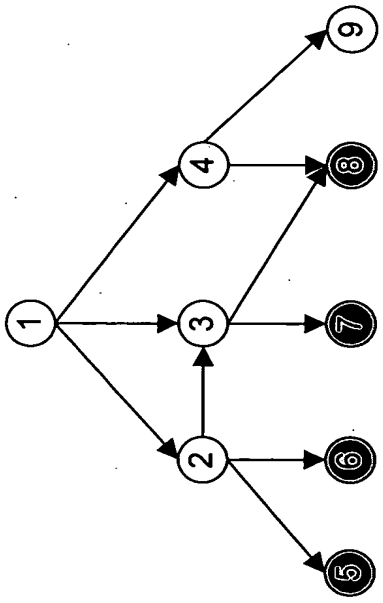

Figure 12